

What is Claimed Is:

1. A method of manufacturing a stamper/imprinter for use in patterning of a recording medium, comprising sequential steps of:

- (a) providing a substrate/workpiece comprising:
 - (i) a topographical pattern formed in a portion of a surface of said substrate/workpiece, said pattern defining a periphery; and
 - (ii) an alignment mark formed in another portion of said surface of said substrate/workpiece surrounding said periphery of said topographical pattern;
- (b) forming an opaque protective film overlying at least said topographical pattern and said alignment mark;
- (c) removing a peripheral portion of said protective film to expose said alignment mark formed in said surface of said substrate/workpiece;
- (d) removing selected portions of said substrate/workpiece while utilizing said alignment mark for accurate alignment of said substrate/workpiece during the selective removal process; and
- (e) removing remaining portions of said protective film prior to use in patterning of a recording medium.

2. The method as in claim 1, wherein:

step (a) comprises providing a substrate/workpiece wherein said topographical pattern is formed in a central portion of said surface of said substrate/workpiece and defines a circularly-shaped periphery having a first diameter, and wherein said alignment mark formed in said surface of said substrate/workpiece is circularly-shaped with a second, larger diameter.

3. The method as in claim 2, wherein:

step (a) comprises providing a substrate/workpiece wherein said topographical pattern corresponds to a servo pattern for a magnetic or magneto-optical (MO) recording medium, a read-only memory (ROM) pattern, or a wobble groove pattern for a readable compact disk (CD-R) or a readable-writable compact disk (CD-RW).

4. The method as in claim 3, wherein:

step (d) comprises removing a circularly-shaped central portion of said substrate/workpiece to form an opening defining an inner diameter (ID).

5. The method as in claim 4, wherein:

step (d) further comprises removing a circularly-shaped peripheral portion of said substrate/workpiece to define an outer diameter (OD) of an annular disk-shaped stamper/imprinter.

6. The method as in claim 3, wherein:

step (a) comprises providing a substrate/workpiece wherein said topographical pattern corresponds to a servo pattern for a magnetic or magneto-optical (MO) recording medium.

7. The method as in claim 6, wherein:

step (a) comprises providing a substrate/workpiece wherein at least said surface is comprised of a magnetic material having a high saturation magnetization $B_{sat} \geq \sim 0.5$ Tesla and a high permeability $\mu \geq \sim 5$.

8. The method as in claim 1, wherein:

step (b) comprises forming a layer of a release material on said surface of said substrate/workpiece prior to forming said protective film, said layer of release material facilitating subsequent removal of said portions of said protective film in steps (c) and (e).

9. The method as in claim 8, wherein:

step (b) comprises forming a passivation layer as said release material layer on said surface of said substrate/workpiece prior to forming a metallic protective film on said surface of said substrate/workpiece.

10. The method as in claim 9, wherein:

step (a) comprises providing a substrate/workpiece wherein said surface is comprised of a magnetic material selected from the group consisting of Ni, NiFe, CoNiFe, CoSiFe, CoFe, and CoFeV;

5 step (b) comprises forming an oxide passivation layer on said surface of said substrate/workpiece and forming a hard metallic protective film over said passivation layer; and

steps (c) and (e) each comprise mechanically removing respective portions of said protective film.

11. The method as in claim 9, wherein:

step (a) comprises providing a substrate/workpiece wherein said surface is comprised of a magnetic material selected from the group consisting of Ni and Ni-containing alloys; and

5 step (b) comprises forming a Ni-containing oxide passivation layer on said surface of said substrate/workpiece and forming a Ni or Ni-containing alloy protective film over said passivation layer.

12. The method as in claim 11, wherein:

step (b) comprises forming a Ni or Ni-containing alloy protective film having a thickness from about 1 to about 300 μm .

13. The method as in claim 12, wherein:

step (b) comprises forming a Ni or Ni-containing alloy protective film having a thickness of about 50 μm .

14. The method as in claim 1, wherein:

step (d) comprises mechanically removing said selected portions of said workpiece/substrate.

15. The method as in claim 14, wherein:

step (d) comprises removing said selected portions of said substrate/workpiece by means of a "punching" process utilizing a die.

16. The method as in claim 14, wherein:

step (d) further comprises aligning said substrate/workpiece utilizing said alignment mark together with a laser-based alignment system.

17. A method of manufacturing a stamper/imprinter for use in contact patterning of a magnetic recording medium, comprising sequential steps of:

(a) providing a substrate/workpiece comprising:

(i) a surface comprised of a magnetic material having a high saturation magnetization $B_{sat} \geq \sim 0.5$ Tesla and a high permeability $\mu \geq \sim 5$;

(ii) a topographical pattern formed in a central portion of said surface, said topographical pattern defining a periphery and corresponding to a servo pattern for a magnetic recording medium;

and

(iii) an alignment mark formed in another portion of said surface surrounding said periphery of said topographical pattern;

(b) forming a layer of a release material on said surface;

(c) forming an opaque protective film on said layer of release material;

15 (d) removing a peripheral portion of said protective film to expose said alignment mark;

(e) removing selected portions of said substrate/workpiece while utilizing said alignment mark for accurate alignment of said substrate/workpiece during the removal process; and

20 (f) removing remaining portions of said protective film prior to use in patterning of a magnetic recording medium.

18. The method as in claim 17, wherein:

step (a) comprises providing a substrate/workpiece wherein said surface is comprised of a magnetic material selected from the group consisting of Ni, NiFe, CoNiFe, CoSiFe, CoFe, and CoFeV;

5 step (b) comprises forming an oxide passivation layer as said layer of release material; and

step (c) comprises forming a hard metallic protective film over said passivation layer.

19. The method as in claim 18, wherein:

step (c) comprises forming a Ni or Ni-containing alloy protective film having a thickness from about 1 to about 300 μm ; and

5 steps (d) and (f) each comprise mechanically removing respective portions of said Ni or Ni-containing protective film.

20. The method as in claim 17, wherein:

step (a) comprises providing a substrate/workpiece wherein said topographical pattern is formed in a central portion of said surface and defines a circularly-shaped periphery having a first diameter, said alignment mark being 5 circularly-shaped with a second, larger diameter; and

step (e) comprises removing circularly-shaped central and peripheral portions of said substrate/workpiece to form an annular disk-shaped stamper/imprinter having an inner diameter (ID) and an outer diameter (OD).

21. The method as in claim 20, wherein:

step (e) comprises removing said circularly-shaped central and peripheral portions of said substrate/workpiece by means of a "punching" process utilizing a

die and aligning said substrate/workpiece utilizing said alignment mark together
5 with a laser-based alignment system.